Cardiovascular Disease

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Topic owner	*Nottingham City LTC Strategic Group*
Topic author(s)	*Dr. Ian Bowns*
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Executive summary

Introduction

Cardiovascular disease (CVD) includes coronary heart disease (CHD), stroke and peripheral arterial disease. These conditions are frequently brought about by the development of atheroma and thrombosis (blockages in the arteries).

This chapter covers issues relating to cardiovascular disease risk and overall mortality, CHD and heart failure. Lifestyle risk factors - including physical activity, smoking, diet and nutrition, alcohol - along with stroke, diabetes and obesity are all considered in detail in their own chapters.

Key non-modifiable risk factors for CVD include getting older, being male, or having a family history of CVD. These account for about 14% of the risk for CVD.

Crucially, modifiable risk factors account for 86% of the risk of CVD. This is why tackling premature CVD death is so important in addressing health inequalities and increasing life expectancy. These risk factors include:

- Lifestyle factors: smoking, lack of physical activity, poor diet and nutrition, and higher levels of alcohol consumption;
- Physiological/metabolic risk factors: high blood pressure (hypertension); high blood sugar (diabetes); high blood fats (hyperlipidaemia);
- Poor access to quality primary care, in particular to cholesterol and blood pressure-lowering treatments and smoking cessation services; and
- Wider determinants: poverty, poor housing and education.
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Having one cardiovascular condition increases the likelihood of the individual suffering others.

Unmet need and gaps

- Cardiovascular disease (including stroke) is the largest cause of death when all ages are considered, and the second largest cause of death after cancer in people aged under 75 years.
- Coronary heart disease causes 16% of all deaths in both age categories.
- Whilst the rates of premature CVD mortality are declining in Nottingham, the inequality gap between the City and England average remain and the narrowing of the gap has decreased in recent years.
- The CVD mortality rate in the city is significantly higher amongst men than women.
- There is under-detection/diagnosis of important risk factors for CVD, such as hypertension and diabetes, and some CVD conditions, such as heart failure and atrial fibrillation.
- People with severe and enduring mental health problems are at high risk of cardiovascular disease, makes a significant contribution to their shortened life-expectancy.
- The recorded prevalence of coronary heart disease in GP practices is significantly less than the national average and that of comparator cities.
- There is significant variation in the identification of CHD patients in GP practices, and in the use of optimal drug and other treatments.
- National data shows that people born in South Asia, the Caribbean or East Africa are more likely to die from CVD than the general England population (CHD for South Asians, stroke for people of African Caribbean ethnicity).
- The increased prevalence of diabetes in the Asian population contributes to the increased risk of CHD.
- Men born in Pakistan, Bangladesh and East Africa are more likely to die from CHD than women born in the same countries.
- Qualitative research with middle aged men in areas with higher levels of CVD suggest that men can be resigned to a short life expectancy, disinterested in long term benefits, have low aspirations regarding their life, and therefore are unable or unwilling to change.
- A small scale survey with Asian men suggests that long working hours and perceptions that services are not for men are key barriers to accessing commissioned services.
- Patients with severe and enduring mental disorders are more at risk of having and dying from CVD than the general population due to increased CVD risk factors, poorer access to healthcare and the effect of antipsychotic medication on their metabolism.
- The CVD and CHD mortality rate is significantly higher in the most deprived fifth of the city than in the least deprived. This gap has, however, narrowed over the last decade.
- During 2012-2014 the 4 wards with the highest under 75 CVD mortality rate were Arboretum (highest), Radford & Park, Bridge and Bulwell, none of the wards had statistically significantly higher under 75 CVD mortality rates compared to the city average. Wollaton West had rates significantly lower than the city average. Arboretum also had the highest rate in 2011-2013.

- The prevalence of CHD recorded in Nottingham City GP Practices is significantly less that the national average and in comparable areas, despite the CHD mortality rate being significantly higher than average; this partly reflects the differing age structures of the populations, but also indicates significant under-detection/diagnosis.
- There is wide variation in the proportion of patients at high risk of CVD who are prescribed statin in Nottingham City GP Practices.
- In the Quality and Outcomes Framework, Nottingham City GP Practices performance well in several CHD, Hypertension and Heart Failure domains. But they are significantly worse than the England average with regard to referral of angina patients for exercise testing, recording of cholesterol amongst CHD patients, and the detection of hypertension.
- In 2015/16, 74,834 people were eligible (not already diagnosed as having a cardiovascular condition and aged 40-74 years) for a Health Check. The Health Check programme aims to invite all of those eligible over a five-year period. Two years into the programme, 25,196 people (33.7%) had been invited to take part, short of the intended 40%. Of those invited, 12,412 (49.3% of those invited and just over 16.6% of the entire eligible population) took up the invitation (NHS Health Check, 2015/16, PHE http://fingertips.phe.org.uk/profile/nhs-health-check-detailed/data#page/1/gid/1938132726/pat/6/par/E12000004/ati/102/are/E06000018).
- Angiography rates for city patients are significantly lower than the England average showing lower uptake of this diagnostic technique. It is possible that services may be under-utilised by people from Asian and African-Caribbean groups.

Recommendations for consideration by commissioners

1. Continue the emphasis on the primary prevention of CVD through the NHS Health Checks programme and CVD Prevention Services, particularly the detection of risk factors, including high blood pressure.
2. Address Practice variation in the management of patients identified as being at high risk of CVD through the Health Checks Programme.
3. Nottingham City's representatives on the committee overseeing the local AAA screening programme should influence the programme to increase uptake in the City, particularly amongst BME communities, and to reduce the rate of non-visualisation at screening.
4. Continue having performance targets for groups most at risk of CVD in the prevention services commissioned by Public Health. Consider revising the geographical targeting of services using more recent statistics and wards as the unit of geography rather than LSOA.
5. Encourage uptake of NHS Health Checks, particularly among those who may be at-risk.
6. Utilise services within the CVD prevention pathway commissioned by Public Health for the secondary prevention and management of CVD as well as primary prevention of CVD and cancer.

7. Include similar performance targets for groups most at risk of CVD, in CVD treatment services commissioned by the Clinical Commissioning Group.
8. Address Practice variation in the identification and management of patients with CHD.
9. Improve the access to CVD prevention interventions and CHD management and interventions for patients with severe and enduring mental health problems. This should include management within primary care.
10. Pending the completion of the research, consider making use of the findings of the Interim Report Increasing the uptake of primary and community long-term conditions services in Black and Minority Ethnic (BME) communities in Nottingham - an exploratory research study, to improve access to long-term conditions services for people from BME communities.
11. The CCG should continue to support a new service for those with Familial Hypercholesterolaemia, in line with recommendations from NICE.
12. Increase identification of patients with atrial fibrillation and, possibly, rates of ablation procedures.
13. Support appropriate uptake of a range of diagnostic procedures in light of the revised pathway for the investigation of chest pain.
14. Heart Failure nurses in the community currently support patients with one type of heart failure (left-sided); there is an outstanding need for a service for those with right heart failure.
15. Increase the uptake and performance of cardiac rehabilitation services.
16. Improve the coverage, uptake, speed and outcomes of cardiac rehabilitation programmes.
17. Encourage service providers to provide more complete data for future national and local audits and consider improvements to care pathways in ways suggested by current audit data.

What do we know?

1) Who is at risk and why?

Cardiovascular disease (CVD) includes coronary heart disease (CHD), stroke and peripheral arterial disease. These conditions are frequently brought about by the development of atheroma and thrombosis (blockages in the arteries).

This chapter covers issues relating to cardiovascular disease risk and overall mortality, CHD and heart failure. Lifestyle risk factors - including physical activity, smoking, diet and nutrition, alcohol - along with stroke, diabetes and obesity are all considered in detail in their own chapters. Services for coronary ablation procedures are considered in the stroke chapter.

Key non-modifiable risk factors for CVD include getting older, being male, or having a family history of CVD. These account for about 14% of the risk for CVD.

Crucially, modifiable risk factors account for 86% of the risk of CVD. This is why tackling premature CVD death is so important in addressing health inequalities and increasing life expectancy. These risk factors include:

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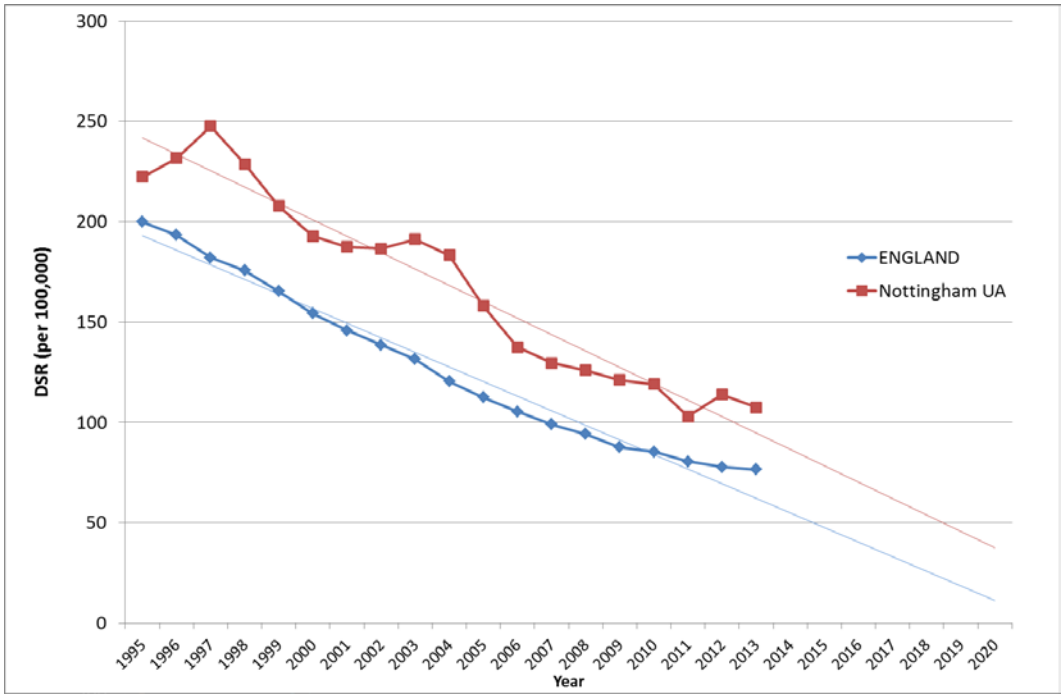
A recent study based on Scottish primary-care records suggested that many patients with CVD also had other long-term conditions: high blood pressure (52%), a painful condition (24%), diabetes (22%), depression (17%), heart failure (14%), stroke or TIA (stroke-like symptoms lasting less than a day, 13%), COPD (13%) and atrial fibrillation (11%). Fewer than one in ten (8.8%) only had DM (Barnett et al, 2012).

2) Size of the issue locally

CVD mortality

- CVD is the main cause of death in Nottingham. Of the 2,270 deaths in 2014, it accounted for 28% of deaths - comprising heart disease (14%), other circulatory diseases (9%) and strokes (6%) (HSCIC Indicator Portal 2015).
- Whilst cancers are the biggest contributor to death amongst people aged less than 75 years (35%), CVD is the second major cause, contributing 24% of all deaths (heart disease (13%), other circulatory diseases (6%) and strokes (5%)).
- From 1995 to 2013 CVD mortality decreased by 61% in Nottingham City compared with 68% in England (based on the trend line, see Figure 1). In 1995, the gap between death rates in Nottingham and England was 48.6 deaths per 100,000. This has reduced to a gap of 32.5 deaths per 100,000 in 2013, a 33% reduction in the gap since 1995.
- There is also a large inequality gap in premature mortality between the most deprived and least deprived fifth of areas in Nottingham for CVD (2012-2014). The gap has narrowed since 2001-2003 (Public Health Mortality File, 2015).
- The CVD mortality rate is significantly higher amongst men than women.
- From 1995 to 2014 CVD mortality decreased by 64% in Nottingham City compared with 57% in England (based on the trend line, see Figure 1). In 1995, the gap between death rates in Nottingham and England was 48.1 deaths per 100,000. This has reduced to a gap of 32 deaths per 100,000 in 2014, a 35% reduction in the gap since 1995.

Figure 1 Premature (under 75 years) mortality from cardiovascular disease 1996-2013



Source: HSCIC Indicator portal 2015

People at risk of CVD

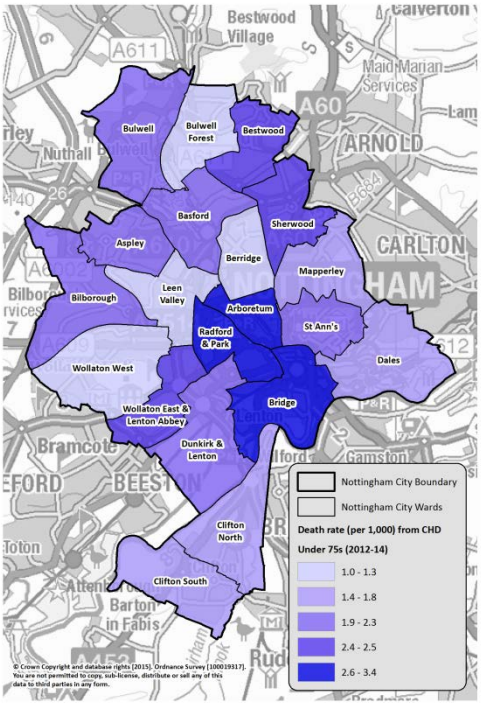
- Local modelling estimates that there are 12,000 people at high risk of CVD in Nottingham City (Hird, 2008).
- 6,456 people were identified as high risk through CVD risk assessments since October 2005; 58% of all patients identified as high risk and still aged 40-74 were managed (i.e. prescribed a statin and/or referred to a CVD prevention service) between October 2010 and September 2011.
- The proportion of people found to be at high risk of CVD is expected to increase with increasing deprivation. Analysis suggests that while this may be the case among women in Nottingham, the percentage of men found to be high risk has been fairly consistent across deprivation quintiles. However, this may be due to the targeted approach of only inviting those patients estimated to be high risk.
- One group at particularly high risk are those with Familial Hypercholesterolaemia (FH, East Midlands Strategic Clinical Network, undated). In this genetic condition, affecting an estimated 1 in 500 of the population, patients have an increased risk of developing heart and circulatory disease at relatively early ages (under 50 years). Men with the most common form have a 50% chance of developing disease before 50; women have a 30% risk by the time they are 60 years old. Only a minority (perhaps 15-17%) are currently diagnosed in primary care. Early treatment greatly reduces their risk. Family members of those affected should also be screened (cascade testing) managed in line with the NICE clinical guideline for the Identification and Management of FH (CG71). People known to have FH are specifically excluded from NHS Health Checks and their management is the responsibility of NHS providers.

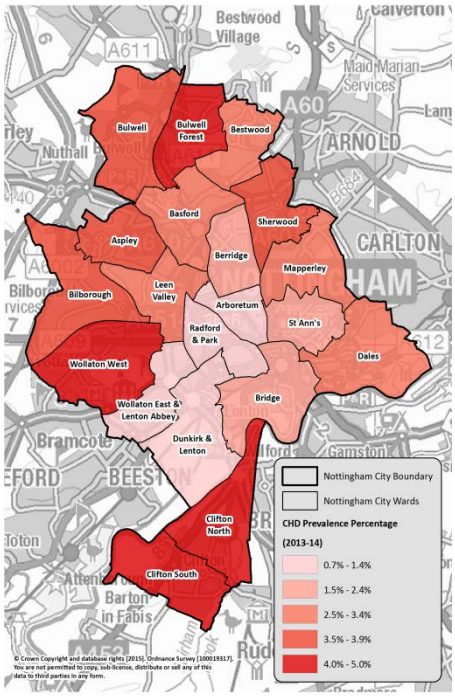
Coronary Heart Disease

- The CHD mortality rate is significantly higher in the most deprived fifth of the city compared with the least deprived fifth (2012-2014). The gap has narrowed since 2001-2003 (NHS Nottingham City, 2011).
- St Ann's had the highest CHD mortality rate (all ages) during 2012-2014 followed by Arboretum, but no ward had a statistically higher CHD mortality rate than the city average.
- The below maps identifies a disparity between deaths from CHD amongst people aged under 75 years (figure 2 - map on the left) and estimates of ward level CHD prevalence based on GP practice Quality and Outcomes Framework data (figure 2 – map on the right).
- This is particularly apparent for Berridge, Arboretum, St Anns, Bridge and Dunkirk & Lenton wards which have higher death rates but lower prevalence of CHD when the Quality and Outcomes Framework data is used.
- The prevalence of CHD recorded in Nottingham City practices (2.8%) is significantly less that the national average and that of the Centres with Industry comparator areas (3.4%).
- There is a wide prevalence range by practice from 5.5% (Bulwell Practice) to (0.1%, University student practice). 12 practices were statistical outliers for unusually low prevalence rates[1]. This may be due to patient demographics, natural random variation or lower than expected diagnosis. There is also wide variation amongst GP practices in the proportion of patients identified with CHD compared to the expected prevalence using Quality and Outcome Framework data (Figure 2). This does not seem to correlate with hospital CHD emergency admission rates by GP practice.

[1] Note: These rates are weighted by practice size.

Figure 2. CHD mortality rates (under 75), 2012/14 vs. estimates of CHD prevalence based on QOF 2013/14





- In 2013/14, the all age admission rate for CHD in Nottingham City was 497 per 100,000 (1,035 admissions). This is significantly lower than England (560 per 100,000). (PHE Cardiovascular Disease Profiles).
- Emergency admission rates for CHD are significantly higher in the most deprived fifth of the city compared to the least deprived fifth (SEPHO, 2012).

Heart Failure

- During 2010-2014 St Anns had the highest all age heart failure mortality rate, followed by Radford & Park and Bridge wards. However, no ward had a rate significantly higher than the city average.
- In 2013/14 and 2014/15 the QOF prevalence of Heart Failure in Nottingham City was 0.55%, significantly lower than the national average of 0.71%. This will be due in part to the younger age profile of the City compared with the national population, as heart failure is mainly a disease affecting older adults. The great majority (91%) had been diagnosed using the gold-standard test, an echocardiogram (QOF, 2014/15, indicator HF002). Almost all (99%) of those without a contraindication to the class of drugs had been prescribed the appropriate drug (ACE-I or ARB, QOF, 2014/15, indicator HF003) that reduces mortality and acute illness. The great majority (90%, QOF, 2014/15, indicator HF004) were also receiving a beta-blocker drug licensed for use in heart failure, which also improves outcomes for patients.
- The admission rate for heart failure was significantly higher than the England average; 179 admissions per 100,000 compared to 133.7 admissions in England. The gap between Nottingham and England has narrowed over the last 10 years (2013/14 PHE CHD Profiles).

Atrial Fibrillation (AF)

- The prevalence of diagnosed AF on GP registers locally was 3,693 persons with AF or 1.04% of the population (QOF 2013/14), which is considerably less than the national average (1.57%). This suggests that there may be as many as 2,300 undetected cases of AF in the population. For more details see the stroke chapter.

Peripheral Artery Disease

- Peripheral arterial disease (PAD) usually affects the blood supply to the legs, causing pain on walking or climbing stairs. Treatment, which may involve lifestyle changes, medication or even surgery, aims to slow the progression of the condition, potentially reversing the disease, and managing the patient's risk of other cardiovascular disease. One type of CVD generally increases the risk that a patient will develop other types of CVD.
- The prevalence of diagnosed peripheral arterial disease on GP registers locally was 1,719 persons (QOF, 2014/15. Most of these patients had been given two of the most important medications to manage their risk of further cardiovascular disease, namely to control their blood pressure (89% controlled, QOF, 2014/15, indicator PAD002) and aspirin or a similar drug (94%, QOF, 2014/15, indicator PAD003).

Notable changes since JSNA April 11

The JSNA has been significantly updated particularly with comparisons to England from the CVD profile for Nottingham (NCVIN, 2015) and ward level comparisons, and the addition of sections of performance in various national clinical audits.

3) Targets and performance

Heart failure

A national audit was conducted on patients admitted to hospital for heart failure (NICOR, 2013). The latest report covers the 2012/13 year and analyses nearly 44,000 admissions. It shows that outcomes for patients had improved on the previous year, but remained variable from hospital to hospital. Mortality was still significant at 9.4% in-hospital, and a further 24.6% dying in the follow-up period, reflecting the seriousness of the condition.

Data quality at NUH was described as “partial” as records only appeared to cover 22.3% of all patients admitted with heart failure. There were, however, suggestions that there was room to improve the quality of care, particular in terms of specialist input from cardiology at QMC (c.f. City Hospital), discharge planning, and follow-up by specialist nurses after discharge. These should be treated cautiously, as data completeness was so low.

The CCG should incentives NUH to provide more complete data for future audits and consider improvements to care pathways in ways suggested by current audit data.

Myocardial infarction (“heart attack”)

The Myocardial Ischaemia National Audit Project has reported on the treatment of heart attacks and related, acute conditions for thirteen years. The latest report describes the care and, for the first time, survival outcomes, of heart attacks in the UK.

One of the main reasons for establishing the audit was the advent of thrombolysis, where drugs are used to dissolve the clots that contribute to the heart damage in a heart attack. Several trials had shown that this improved survival and quality of life of patients. But, speed of administration was critical to success and the audit sought to monitor how well this treatment was delivered across the NHS. Later research (MINAP,) has shown that primary coronary interventions (PCI) is better for patients that thrombolysis, though speed of treatment remains central to success.

In England:

- The great majority of patients were treated within 150 minutes of calling for help and 90 minutes of arriving at hospital.
- Patients who were initially seen at a hospital capable of carrying out PCI were treated more quickly than those who had to be transferred form the first hospital they attended. This affected the speed of treatment of 19% of patients.
- Thrombolysis is now only used for about 2% of patients nationally.
- Of patients who survived to discharge, 88% received all the preventative drugs for which they were eligible. This leaves some room for improvement.
- The mortality rate at 30 days over 2011-14 was 8.1%, a third lower than in 2003/4.

Locally:

- Although data for Nottingham City Hospital was only 91% complete, 30 day mortality was 7.1%, below the national average, but similar to other hospitals that carry out

PCI procedures. QMC, which does not carry out PCIs, saw far fewer patients, but like other hospitals, had higher mortality, at 19.8% (national average 14.3%).

- Speed of treatment with PCI (the proportion treated within 150 minutes of calling for help) was very similar to the national average for Nottingham City Hospital.
- Locally, preventative treatments were delivered rather less frequently than the national average (88%), with 83.1% of patients receiving all treatments indicated, though 87% of patients discharged form QMC received all their treatments.

4) Current activity, service provision and assets

Hearts and Minds programme run by Bright Ideas Nottingham

Hearts and Minds is a programme, initially funded by the British Heart Foundation (BHF), and developed by Bright Ideas in Nottingham. It aims to identify approaches that work in relation to promoting heart health in Nottingham's visible and non-visible diverse Black and minority ethnic communities. The programme has included an annual conference, the development of community action researchers and "the Love Hearts", a team of volunteers that work on the project to improve the Heart Health of African Caribbean Communities. The programme is currently being evaluated. The BHF are also evaluating other programmes they have supported, including an integrated care (so-called 'house of care') pilot in Hardwick CCG (Derbyshire), running for two years to May 2017, which will be evaluated. The BHF also produce a range of best-practice and training materials for professionals.

NHS Health Checks commissioned by public health

The aim of NHS Health Check programme in Nottingham City is to prevent heart disease, stroke, diabetes and kidney disease through offering a 'midlife MOT' to anyone without a pre-existing condition aged 40-74. Everyone eligible should be invited for a health check every five years – 20% of the relevant population should therefore be invited each year. Patients will be invited for an NHS Health Check once every 5 years, therefore around one-fifth of the eligible population should be offered a check each year. Pre-existing conditions that are excluded from the programme are coronary heart disease, chronic kidney disease, diabetes, hypertension, atrial fibrillation, transient ischaemic attack, hypercholesterolaemia, heart failure, peripheral arterial disease and stroke. In addition, people who are prescribed statins are also excluded, as are any people who have previously been identified as having a 20% or higher risk of developing cardiovascular disease over the next ten years.

The check includes a blood test to check cholesterol and blood glucose, measurements of blood pressure, BMI (height and weight) and questions around demographics, family history and lifestyle (e.g. smoking status, alcohol, physical activity, etc.). Patients found to be at high risk of cardiovascular disease, and those who are diagnosed with a condition as a result of the Health Check, are managed according to normal pathways.

GPs (currently 61 practices in Nottingham city) are the principal providers and are commissioned to identify, prioritise and invite their eligible population for NHS Health Checks, as well as deliver the Health Check itself. There has also been some limited alternative provision through local pharmacies, although this has not proved to be particularly successful and has recently been phased out.

The effectiveness of general health checks in reducing morbidity and mortality has been debated in the published literature (Braillon et al., 2015), but remains supported by the UK government, and is a statutory duty of local government.

According to nationally published data (from http://www.healthcheck.nhs.uk) in 2013/14 the eligible population in Nottingham city was 73,583, of whom 12,636 were offered a health check during the year, which equates to 17.17% of the eligible population, compared to 18.42% across all of England in the same period. The number of appointments received in Nottingham in 2013/14 was reported by healthcheck.nhs.uk as 6,295, representing 8.55% of the eligible population, which compares with 9.03% nationally (England).

In 2014/15:

- 5,063 NHS Health Checks were completed
- 157 patients were found to be high risk as result of their Health Check
- 273 patients were prescribed statins within two months of their Health Check
- 46 patients were newly diagnosed with Type 2 Diabetes as a result of the Health Check (defined as diagnosed within 90 days of the Health Check), 4 patients were diagnosed with Chronic Kidney Disease, 111 were diagnosed with hypertension and 4 were diagnosed with atrial fibrillation (TCR DH outcomes report [accessed 16/11/15])

There is a wide variation in the proportion of high risk patients treated with a statin to control cholesterol levels by general practices locally.

Increasing uptake in Nottingham such that it exceeds the national average may be one way of reducing the health inequality due to CVD between Nottingham and England. However, a local intra-city analysis of inequality within Nottingham itself is also important, in order to ensure that there is not a local unintended effect of prioritising the worried well over the sick and needy, and increasing health inequality within the city, even if the overall effect is to decrease inequality at the national level. Health Equity Audits have been carried out to examine how far Health Checks are focussed on those in greatest need (Hawley, 2015). The key findings of the first audit were: firstly, that the invited population was significantly different from the uninvited and that this appeared to show that CVD risk was being used as a means of prioritising invitations; and, secondly, that those with higher CVD risk, particularly as represented by age, deprivation and smoking status, were less likely to take up their invitation. The second audit also found that a risk stratified approach is being adopted with respect to invitations issued for health checks, and that this is being successful with respect to the take-up of the service by patients with a higher calculated risk score. It also found, however, that there is evidence that the reach of the service is inequitably distributed with respect to other characteristics, and that in some cases this may be attributable to invitation strategy as well as patient propensity to take up the service. In particular:

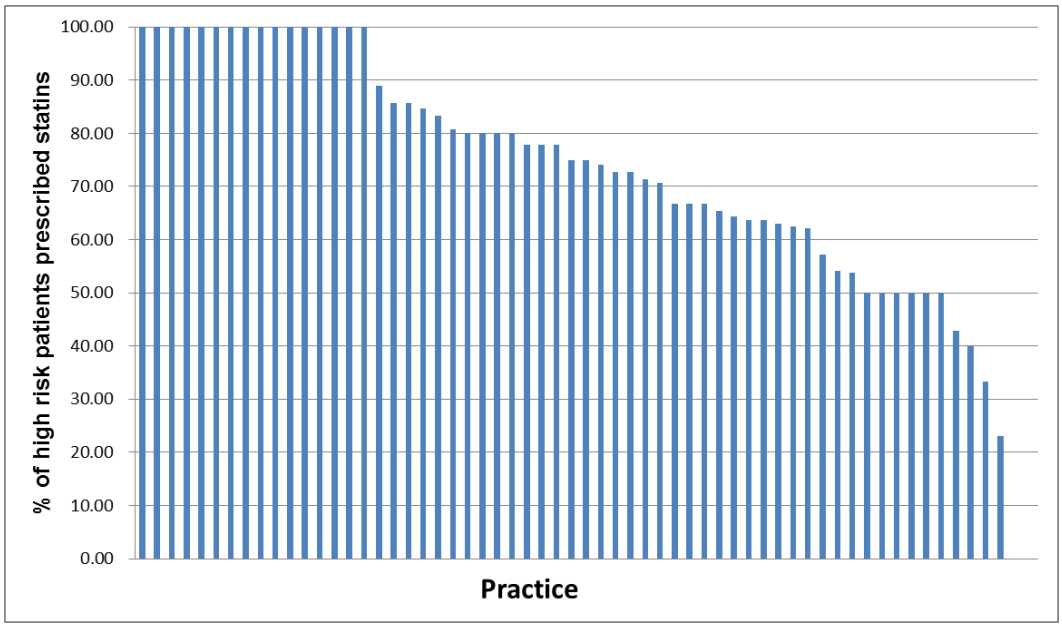
- Although men are more likely to be invited because of their higher risk, they are less likely to take-up the invitation;

- The position is similar for current smokers, who are more likely to be invited, reflecting their higher risk profile, but less likely to be assessed. Some of this is likely to be explained by the fact that more men are current smokers, but may also reflect a greater reluctance to seek medical help amongst smokers generally (Chen et al., 2012);

- With respect to ethnicity, there is inequity between White British and aggregated other ethnicities for probability of being invited and attending. When disaggregated to individual ethnic groups, there is some considerable variation in this respect, with some ethnicities appearing to be significantly better than White British and some significantly worse. With respect to the latter, the underrepresentation within the Pakistani community may be worthy of further investigation.

The national and local NHS Health Check programme is, in principle, a universal service, with the aim being to reach 100% of the eligible population every five years. Achieving 100% uptake would obviously ensure that the programme is delivered equitably. In reality such a position is unattainable, and the current performance target is set at 60%. It seems likely that the lower the proportion of uptake that is achieved, the greater the likelihood for perverse outcomes in terms of equity of access to the service. One approach might therefore be to seek a higher overall target for uptake. An alternative strategy might be to incentivise uptake within specific groups identified as deficient. In particular, it might be that greater uptake from men and from smokers could be sort by setting differential uptake targets for those groups. In addition, the apparent underrepresentation from the Pakistani community warrants further attention, particularly in light of the higher risk of diabetes associated with people of South Asian origin.

Figure 3. Percentage of *high risk patients prescribed a statin by practice (QOF 13/14, CHD006)*



Adult healthy lifestyle service to prevent long-term conditions and services commissioned by public health

The adult healthy lifestyle service enables adult patients with one or more lifestyle risk factors for CVD to access behavioural change support to improve risk factors. These risk factors are common to other conditions such as certain cancers, and therefore the pathway contributes to the prevention of other chronic/long term conditions as well. These services are currently subject to a commissioning review, with the intention that revised services will be commissioned from April 2017.

The pathway utilises the *proportionate universalism* concept advocated in the Marmot Review. All of the commissioned services are available to Nottingham City residents and patients aged 18 years and over. In addition, all of the commissioned services are targeted towards the most socially-deprived ten electoral wards in the City (Figure 4).

Figure 4. Current CVD priority areas for commissioned lifestyle services



Supporting people with CVD

Management of hypertension, CHD and heart failure in primary care

The Quality and Outcomes Framework (QOF) includes a number of indicators for practices, CCGs and the country about the management of cardiovascular disease, including high blood pressure, atrial fibrillation, cardiovascular risk, stroke, heart failure, and peripheral vascular disease. The latest data relate to 2014/15 (QOF, 2014/15). In general, detection rates (reflected in the registers of people diagnosed with each risk or condition) are below the local and national average for these conditions. The published figures do not, however, allow us to assess the extent to which this might be explained by genuinely lower prevalence rates, because of the younger age profile of the City's population (most of these conditions are more common among older people). In addition, indicators of good treatment are very slightly below neighbouring areas, although this is often very marginal. In addition, relative to other areas, our position has not generally improved from the figures in the last JSNA, which were for 2010/11.

Heart Failure nurses in the community currently support patients with one type of heart failure (left-sided), there is an outstanding need for a service for those with right heart failure.

Chest pain services

NICE Guidance now recommends a more complex pathway for the investigation of suspected stable angina (chest pain on exertion caused by ischaemic heart disease). Simply, a wider range of tests may be used, depending on the initial estimation of the probability that the patient has angina. A pathway has been developed, though there have been issues with maintaining short waiting times.

Cardiac surgery

The CVD profile (SEPHO, 2012) contains a range of information on cardiac procedures. Key issues include:

- Angiography rates and significantly were lower than the England average and Centres with Industry. Rates have decreased in the city since 2003/4, whereas they have increased in England and Centres with Industry. These lower levels of angiography may be an indication of lower levels of reporting of heart disease symptoms in primary care or investigation, and may contribute to the higher levels of revascularisation in the city.
- Angioplasty rates are significantly higher in the city than the England average and Centres with Industry.
- Coronary Artery Bypass Graft (CABG) rates are significantly lower than the England average and Centres with Industry.
- Revascularisation rates are higher in the most deprived quintile in the city than the least deprived, but the gradient is less marked than in England and Centres with Industry.
- Survival rates for cardiac surgery (98.3%) at NUH are higher than required for UK standards (Care Quality Commission, 2010).

Cardiac rehabilitation

The national audit of cardiac rehabilitation (NICOR, 2012/13), found:

- Waiting times for cardiac rehabilitation in the East Midlands do not meet the national target (42 days) for patients with myocardial infarction or heart surgery, although assessments are carried out much more quickly and faster than in most regions.
- A basic minimum of 56 days rehabilitation is proposed. On average, most regions, including the East Midlands (42-50 days, depending upon indication), were not meeting this target.
- Only 3% of patients stopped smoking during cardiac rehabilitation in the East Midlands; this is the lowest proportion of any region.
- Exercise levels at the start (9%) and completion (17%) of rehabilitation were the lowest in the country, with the smallest improvement, at 8%.
- In contrast, the proportion of patients with a BMI<30 increased by 2% during rehabilitation in the Easy Midlands. Though modest, this is the highest increase in the country.
- There were reasonable reductions by patients following rehabilitation in anxiety and depression they experienced. In addition, quality of life overall improved well during rehabilitation.

The audit report recommended:

1. CR programmes are treating more patients than ever but more needs to be done to recruit and refer a greater percentage of patients from the eligible groups. This is particularly the case for medically managed post MI patients and elective PCI patients.

2. There is an urgent need for CR services not meeting the minimum standards to redesign their services to align with national guidance and evidence-based practice. Specifically this means that those programmes not adhering fully to clinical and national guidance should:

i. Start CR earlier for all patient groups

ii. Carry out pre CR assessment early and use this data to tailor the intervention

iii. Ensure that the duration of CR is aligned with national guidance

iv. Complete and record an end of CR assessment (post CR)

v. Submit data on CR delivery and patient outcomes to the national audit.

Abdominal Aortic Aneurysm Screening

An abdominal aortic aneurysm (AAA) is a weakening and expansion of the main blood vessel (the aorta) in the abdomen. Such aneurysms can expand and even burst, usually resulting in death. An ultrasound scan of the abdomen is the easiest way to check whether someone has an AAA. As AAA is most common in men aged 65 and over, the national screening programme offers a screening ultrasound test to men as they attain the age of 65 years. Men over that age can also refer themselves for a screening test. The National Screening Programme aims to reduce mortality by up to 50% by detecting and effectively treating suitable aneurysms.

In general, the Nottinghamshire Screening Programme performs very well (The Nottinghamshire Abdominal Aortic Aneurysm Screening Programme

Annual Report 2014-15). In 2014/15:

- Of those invited to be screened (5,407 men), some 4,297 (79.5%, c.f. 79.3% nationally) accepted.
- 40 aneurysms were detected (0.93%, c.f. 1.19% nationally).
- The programme achieved almost all standards, except those where the standard is not being achieved nationally and may be reviewed.
- Patient satisfaction levels were high (97.3% rated their experience as good or excellent).

The main exception is for the rate of non-visualisations (where the aorta is not seen adequately on the screening scan), where 3.69% of Nottinghamshire scans were non-visualised (c.f. 1.12% nationally). This has, however, improved dramatically over the three years of screening (from 8.17% in 2012/13, and 5.33% in 2013/14). Achievement is expected by 2015/16 or 2016/17.

The outcomes of surgery cannot currently be reported, as the number of operations is very small and publication of the actual figures would constitute a risk to patient confidentiality.

From the perspective of Nottingham City CCG, however, uptake was lower, at 72.3%, than for the other CCGs served by the programme, and no publicity to increase uptake could be undertaken by the programme due to a lack of staff capacity, which should be rectified. Nottingham City's representatives on the committee overseeing the local programme should influence the programme to increase uptake in the City, particularly amongst BME communities, and to reduce the rate of non-visualisation at screening.

5) Evidence of what works

NICE Guidance

Below is a list of the NICE clinical guidance documents related to primary prevention of cardiovascular disease and the management of hypertension and cardiac disease:

CG36 (2006) – Management of atrial fibrillation

CG34 (2006) – Management of hypertension in adults in primary care

CG48 (2007) - Secondary prevention of myocardial infarction

CG67 (2008) – Lipid modification and risk assessment

CG71 (2008) - Identification and management of familial hypercholesterolaemia

CG94 (2010) - Unstable angina and NSTEMI

CG108 (2010) - Chronic heart failure

CG95 (2010) - Chest pain of recent onset

CG107 (2010) - Hypertension in pregnancy

CG127 (2011) - Hypertension

CG126 (2011) - Management of stable angina

The NICE public health guidance documents below have been published for the prevention of cardiovascular disease:

PH15 (2008) - Identifying and supporting people most at risk of dying prematurely: guidance

PH25 (2010) - Prevention of cardiovascular disease: guidance

DEPARTMENT OF HEALTH Guidance

Putting Prevention First - NHS Health Check: Vascular Risk Assessment and Management, Best Practice Guidance (2008)

For NICE guidance on CVD risk factors please refer to the NICE website or the relevant Nottingham JSNA chapters.

6) What is on the horizon?

- Redesign and procurement of local authority commissioned lifestyle services.
- Development, agreement and commissioning of a complete service for this with familial hypercholesterolaemia.

7) Local Views

NHS Health Checks

NHS Nottingham City piloted cardiovascular health checks through the Happy Hearts pilot in 2008-2009. As part of this various means were used to develop customer insight which informed the service approach, and informed our subsequent NHS Health Checks service.

Market research was commissioned, which included 16 in-depth one-to-one interviews of patients who had been invited for a consultation. The aim was to ascertain what had either prevented them from responding or attending an assessment, or for those who had attended, what had motivated them to do so. Patients who had attended were also asked about their perceptions of the service and their experiences of the programme. This information was invaluable in designing the way in which people were invited.

Other methods to ensure an accessible service included: pre-testing leaflets with local residents within the target age range, and scripted phone calls to invite people who had not yet attended their GP surgery to attend specific community events on a Saturday.

Evaluation of CVD prevention services

The views of service users were obtained as part of the evaluation of the Healthy Change, Be Fit and Physical Activity Referral Service conducted by MEL Research for NHS Nottingham City in 2012. In general, these were positive across all services and there was evidence that services had been adapted in response to client feedback. The evaluators were not, however, able to obtain the views of those who dropped out of these services in any detail and recommended that they be obtained later.

Improving CVD Prevention Services to Engage Men in Nottingham City – Insight Project

Qualitative interviews were commissioned in 2011 to provide insight into developing healthy living interventions aimed at men aged 40 and over who were overweight (DH Insight, 2011). Amongst 39 participants some of the key findings in the report were:

The main barriers to interviewees potentially accessing services were:

- A lack of motivation.
- A lack of interest in specific activities.
- A perception that they did not need to change.
- A lack of confidence in going into new situations.
- Feeling that they would not fit in with other people attending such activities.
- A perception that activities would cost money.
- A lack of disposable income.
- A lack of time.
- Not wanting to travel out of their neighbourhood.

- A lack of knowledge regarding what kind of activities might be available and appropriate for them.

- Many interviewees admitted to being somewhat lazy and enjoying an easy life; they felt that this would have to change if they were to have a healthier lifestyle and were not prepared to do so.

- For some interviewees, the fear of failure or lack of self-confidence meant that they were not prepared to attempt to make changes in case they were unable to do this successfully.

- There was a strong view that eating healthily meant that interviewees would have to give up the food that they enjoyed and start eating food that was bland, 'worthy' and unpalatable.

- Resigned themselves to a short life expectancy, therefore disinterested in long term benefits.

- Low aspirations regarding their life, therefore unable or unwilling to change.

- Coping with the impact of specific life events such as divorce, bereavement or redundancy.

- Acceptance of a certain amount of vices such as smoking or not taking much exercise.

- Dislike of authority and being told how to live their lives.

- The impact of working long shifts and the perception that physical jobs provided enough exercise.

- The importance of creating a more structured life after a period of homelessness taking precedence over healthy living (for a minority).

- The responsibilities of being a father and/or partner and the desire to spend leisure time in the home. This view was particularly strong within the Asian men's focus group.

Increasing the uptake of primary and community long-term conditions services in Black and Minority Ethnic (BME) communities in Nottingham - an exploratory research study - Interim Report

This, interim report of on-going research commissioned by the City's CCG, has reviewed previously published research and identified a number of potential barriers to uptake by minority ethnic groups and also likely enablers of improved access. Enablers were categorised as:

- Use of evidence
- Communication and trust
- Culturally-adapted interventions/training
- Community links
- Finance
- Family support and social networks
- Patient involvement

Awareness and engagement in Prevention Services by Asian men

A survey of 106 Asian men (mainly Pakistani) was conducted in the Sneinton area for the Muslim Community Organisation (Muslim Community Organisation, 2012). Key finding included:

• 46.46% of respondents were aware of health and wellbeing services on offer in the area with 24.43% expressing an interest in receiving help and assistance from these services.

• Over 30% sited not enough time and or working long unsociable hours as a main reason for not using these services followed by 27.7% feeling they were not for men, 23.4% felt they cost too much and 21.3% felt they had no one to go with.

• 60.2% would like the MCO to assist them to make positive lifestyle changes and improve their

• Health & wellbeing;

The most popular activities 47.6% Exercise/gym visits, 47.6% Exercise/gym visits, healthy diet classes, 29.1% swimming classes and 16.5% requesting assistance with weight loss programmes.

Familial hypercholesterolaemia service

Although there is NICE Guidance on the detection, diagnosis and treatment of people with this condition, it has not yet been possible to obtain the agreement of all CCGs in South Nottinghamshire to commission a service that is fully compliant with these guidelines.

What does this tell us?

8) Unmet needs and service gaps

- Cardiovascular disease (including stroke) is the largest cause of death when all ages are considered, and the second largest cause of death after cancer in people aged under 75 years.

- Coronary heart disease causes 16% of all deaths in both age categories.

- Whilst the rates of premature CVD mortality are declining in Nottingham, the inequality gap between the City and England average remain and the narrowing of the gap has decreased in recent years.

- The CVD mortality rate in the city is significantly higher amongst men than women.

- Under-detection/diagnosis of important risk factors for CVD, such as hypertension and diabetes, and some CVD conditions, such as heart failure and atrial fibrillation.

- People with severe and enduring mental health problems are at high risk of cardiovascular disease, makes a significant contribution to their shortened life-expectancy.

- The recorded prevalence of coronary heart disease in GP practices is significantly less than the national average and that of comparator cities.

- There is significant variation in the identification of CHD patients in GP practices.

- National data shows that people born in South Asia, the Caribbean or East Africa are more likely to die from CVD than the general England population (CHD for South Asians, stroke for people of African Caribbean ethnicity).

- The increased prevalence of diabetes in the Asian population contributes to the increased risk of CHD.

- Men born in Pakistan, Bangladesh and East African are more likely to die from CHD than women born in the same countries.

- Qualitative research with middle aged men in areas with higher levels of CVD suggest that men can be resigned to a short life expectancy, disinterested in long term benefits, have low aspirations regarding their life, and therefore are unable or unwilling to change.

- A small scale survey with Asian men suggests that long working hours and perceptions that services are not for men are key barriers to accessing commissioned services.

- Patients with severe and enduring mental disorders are more at risk of having and dying from CVD than the general population due to increased CVD risk factors, poorer access to healthcare and the effect of antipsychotic medication on their metabolism.

- The CVD and CHD mortality rate is significantly higher in the most deprived fifth of the city than in the least deprived. This gap has, however, narrowed over the last decade.

- During 2012-2014 the 4 wards with the highest under 75 CVD mortality rate were Arboretum (highest), Radford & Park, Bridge and Bulwell, none of the wards had statistically significantly higher under 75 CVD mortality rates compared to the city average. Wollaton West had rates significantly lower than the city average. Arboretum also had the highest rate in 2011-2013.

- The prevalence of CHD recorded in Nottingham City GP Practices is significantly less that the national average and in comparable areas, despite the CHD mortality rate being significantly higher than average; this partly reflects the differing age structures of the populations.

- There is wide variation in the proportion of patients at high risk of CVD who are prescribed statin in Nottingham City GP Practices.

- In the Quality and Outcomes Framework, Nottingham City GP Practices performance well in several CHD, Hypertension and Heart Failure domains. But they are significantly worse than the England average with regard to referral of angina patients for exercise testing, recording of cholesterol amongst CHD patients, and the detection of hypertension.

- In 2015/16, 74,834 people were eligible (not already diagnosed as having a cardiovascular condition and aged 40-74 years) for a Health Check. The Health Check programme aims to invite all of those eligible over a five-year period. Two years into the programme, 25,196 people (33.7%) had been invited to take part, short of the intended 40%. Of those invited, 12,412 (49.3% of those invited and just over 16.6% of the entire eligible population) took up the invitation (NHS Health Check, 2015/16, PHE http://fingertips.phe.org.uk/profile/nhs-health-check-detailed/data#page/1/gid/1938132726/pat/6/par/E12000004/ati/102/are/E06000018).

- Angiography rates for city patients are significantly lower than the England average showing lower uptake of this diagnostic technique. It is possible that services may be under-utilised by people from Asian and African-Caribbean groups.

9) Knowledge gaps

The CCG should incentives NUH to provide more complete data for future audits and consider improvements to care pathways in ways suggested by current audit data.

What should we do next?

10) Recommendations for consideration by commissioners

1. Continue the emphasis on the primary prevention of CVD through the NHS Health Checks programme and CVD Prevention Services, particularly the detection of risk factors, including high blood pressure.

2. Address Practice variation in the management of patients identified as being at high risk of CVD through the Health Checks Programme.

3. Nottingham City's representatives on the committee overseeing the local AAA screening programme should influence the programme to increase uptake in the City, particularly amongst BME communities, and to reduce the rate of non-visualisation at screening.

4. Continue having performance targets for groups most at risk of CVD in the prevention services commissioned by Public Health. Consider revising the geographical targeting of services using more recent statistics and wards as the unit of geography rather than LSOA.

5. Encourage uptake of NHS Health Checks, particularly among those who may be at-risk.

6. Utilise services within the CVD prevention pathway commissioned by Public Health for the secondary prevention and management of CVD as well as primary prevention of CVD and cancer.

7. Include similar performance targets for groups most at risk of CVD, in CVD treatment services commissioned by the Clinical Commissioning Group.

8. Address Practice variation in the identification and management of patients with CHD.

9. Improve the access to CVD prevention interventions and CHD management and interventions for patients with severe and enduring mental health problems. This should include management within primary care.

10. Pending the completion of the research, consider making use of the findings of the Interim Report Increasing the uptake of primary and community long-term conditions services in Black and Minority Ethnic (BME) communities in Nottingham - an exploratory research study, to improve access to long-term conditions services for people from BME communities.

11. The CCG should continue to support a new service for those with Familial Hypercholesterolaemia, in line with recommendations from NICE.

12. Increase identification of patients with atrial fibrillation and, possibly, rates of ablation procedures.

13. Support appropriate uptake of a range of diagnostic procedures in light of the revised pathway for the investigation of chest pain.

14. Heart Failure nurses in the community currently support patients with one type of heart failure (left-sided), there is an outstanding need for a service for those with right heart failure.

15. Increase the uptake and performance of cardiac rehabilitation services.

16. Improve the coverage, uptake, speed and outcomes of cardiac rehabilitation programmes.

17. Encourage service providers to provide more complete data for future national and local audits and consider improvements to care pathways in ways suggested by current audit data.

Key contacts

Rachel.Sokal@nottinghamcity.gov.uk Public Health Consultant, Nottingham City Council

Hazel.Wigginton@nottinghamcity.nhs.uk Assistant Director of Community Services and Integration, Nottingham City CCG

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